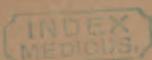


LAWRENCE (R. M.)

With the Writer's Compliments.



THE THERAPEUTIC VALUE OF THE IODIDE OF ETHYL.

By ROBERT M. LAWRENCE, M.D., BOSTON.



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THE Iodide of Ethyl or Hydriodic Ether, $C^2 H^5 I$, may be prepared by careful distillation of a mixture containing ten parts of Iodine, five parts of absolute alcohol and one part of phosphorus.¹ It is normally colorless, but on exposure to light becomes a reddish-brown, owing to the separation of the Iodine and Ethyl, the decomposition taking place slowly in diffused daylight, quickly in sunshine.² Its odor is like that of chloroform, its taste sweetish. It is soluble in alcohol, but not in water. It has no acid reaction, is non-inflammable, and boils at 158°F. (70°C.).

Its specific gravity is 1.93 at 59°F. (15°C.).³

Although discovered by Gay-Lussac in 1815, it does not appear to have been proposed as a medicinal agent until 1850, when M. Huette made some experiments with the object of determining its value as a remedy in phthisical dyspnoea.

Influenced by his favorable report, Dr. Turnbull, of Liverpool, employed it in chronic pulmonary affections. In an address before the British Medical Association,⁴ he remarked that Iodine had often been tried in this class

¹ U. S. Dispensatory, part iii. 1871.

² Waitt's Dictionary of Chemistry, vol. ii. p. 534.

³ Stillé and Maisch's Dispensatory.

⁴ Pharmaceutical Journal, 1854-5, p. 232.

of diseases, but that its use had been abandoned on account of its irritating effects. In order to give it by inhalation, it was desirable to find a compound possessing the requisite volatility and absence of irritating qualities, and he considered the Iodide of Ethyl to be such a compound.

However, the drug was soon forgotten and was unheard of for nearly twenty-five years, until attention was directed to it by Professor Sée, of Paris,¹ who after employing it in a number of cases attended with dyspnoea, reported that he had found it very efficient in relieving that symptom. In 1879, Dr. Thorowgood² made use of it in several cases of Asthma, at the Victoria Park Hospital, in London, with good results. The writer has carefully studied its effects, having employed it systematically during the past fifteen months.³

The drug may be administered as follows:

Having moistened a handkerchief with eight or ten drops, let the patient inhale the vapor therefrom. As soon as he shall have acquired confidence, let the inhalations be made directly from a small vial containing half a drachm of the drug, and applied to the nostrils. Let the inhalations be continued for ten minutes at a time, thrice daily or oftener. Should slight nervous symptoms, due to the primary exhilarating effects of the ether, supervene, the inhalations may be discontinued for some seconds, and then resumed. By this method, the system is kept constantly impregnated with iodine.

After frequent personal experiments, and observation of its effects on others, the writer feels warranted in mak-

¹ *La France Medicale*, February 2, 1878.

² *Braithwaite's Retrospect*, July, 1879, p. 115.

³ See *Boston Med. and Surg. Journal*, April 29, 1890.

ing the following statement: Ethyl Iodide has no depressing effect on any of the functions. It is a mild invigorant, and its primary action resembles that of sulphuric ether, while it differs from the latter in that it has no anæsthetic properties.

A very brief time is required for its absorption. The Iodine is taken up by the respiratory mucous membrane, and is conveyed by the bronchial and pulmonary veins directly to the left auricle, and thence into the arterial circulation. It has been detected in the urine in ten minutes after the inhalations. The writer has found it in urine voided at the following intervals: forty-five minutes; one, seven, eighteen, twenty-four, thirty hours.

Its physiological action is thus described by M. Huette:¹ "After some inhalations, an impression of calmness and satisfaction announces that the Hydriodic Ether acts at first in conformity with the other ethers employed in medicine. The respiratory motions are carried on with a readiness and fulness, advantageous to the circulation. But the antispasmodic action of the ethereal vapor, which favors the absorption of the remedy, is soon followed by the influence of the absorbed Iodine. The increase of vigor ceasing to be limited to the thoracic muscles, extends to the whole muscular system. The appetite is developed, the secretions are increased, the pulse acquires fulness, and the vivacity of the feelings, and the activity of the intellect, prove that the impulse given to the other organs extends to the brain also."

Later observers have not fully corroborated all of the above statements, though most of them are doubtless correct.

¹ American Journal of Pharmacy, vol. xxiii. p. 153.

The action of the drug on the human system in a state of health, is that of an agreeable exhilarant, and is modified by the circumstances of age, sex and idiosyncasy.

The only disagreeable symptom which the writer has experienced, has been a slight dizziness.

Professor Séé's opinion on this point is expressed as follows: "After a few inhalations there is observed a greater facility of respiration, and this phenomenon persists for several hours. There is no anaesthetic nor soporific effect. Frequently a fit of coughing occurs at the beginning of the inhalation." It appears, therefore, and we may be pardoned for dwelling on this important point, which can be verified by any one who will himself experiment with the drug, that Ethyl Iodide exerts a special influence over the respiratory function.

It has moreover been proved that this agent, when inhaled, is capable of relieving certain forms of dyspnoea. How does it accomplish this? What is its mode of action?

We know that when, from any cause, the proportion of carbonic acid gas in the blood is increased, a centripetal influence is conveyed, chiefly by the pneumogastric nerves, to the respiratory nervous centre. An undue excitation of this centre results, whereby energetic reflex influences are transmitted by motor nerves to the respiratory muscles. In a word, dyspnoea is produced.

1. In the paroxysms of spasmodic asthma and in other forms of nervous dyspnoea,¹ Ethyl Iodide appears to act as an antispasmodic by relaxing the muscular contraction of the bronchial tubes. Their calibre being widened, more air finds access to the pulmonary vesicles. The

¹ Asthma is here classed among the neuroses.

blood becoming once more properly oxygenated, the phenomena of dyspnoea are replaced by freer respiration. Hence the drug may also be said to act by lessening excito-motor action.

2. In the dyspnoea incident to Bronchitis and to chronic affections of the air-passages, it promotes a free mucous secretion. Since this secretion becomes at the same time of a more fluid consistency, air is more readily admitted to the lungs. The action of the drug is here partly expectorant, and resembles that of the alkalies.¹ But since in Bronchitic dyspnoea there exists usually, if not always, a reflex contraction of the bronchi, the antispasmodic quality of the drug is also of value in these cases.

3. If we admit that a frequent cause of dyspnoea is an acute tumefaction of the bronchial mucous membrane,² owing to a dilatation of its blood-vessels, through vaso-motor influence, we may infer that Ethyl Iodide gives relief by causing a contraction of the capillary vessels.³

4. When a difficulty of Respiration is caused by pressure on the air-tubes, of enlarged and indurated bronchial glands, it is reasonable to expect benefit from the continued use of Iodine, administered by this method.

5. When embarrassed breathing is caused by a **PASSIVE CONGESTION**⁴ of the bronchial mucous membrane, which, in turn, is due to an impeded circulation through the lungs or heart in organic affections of those organs, marked benefit can hardly be expected from the drug in question. Yet in cardiac dyspnoea, good effects have been observed from its use.⁵

¹ See *Resumé of Berkart on Asthma*, by Dr. Knight.—*Boston Med. and Surg. Journal*, Feb. 19, 1880.

² Ziemssen's *Cyclopædia of the Practice of Medicine*, vol. iv. p. 536.

³ Dr. Billings on the action of Iodine.

⁴ Salter on *Asthma*, 1868, p. 127.

⁵ Professor Sée, *op. cit.*

6. In general, Ethyl Iodide appears in some way to favor the oxygenation of the blood, and thus stimulate, in a reflex manner, the respiratory muscles. Thus the increased buoyancy of the act of breathing, experienced in widely different pathological conditions, as a primary result of the inhalation of this drug, may be intelligently explained.

To conclude: If this agent has, as the writer believes, a very positive therapeutic value, and is a prompt, safe and efficient remedy in many forms of dyspnœa, it deserves the serious attention of the Profession. May it have a thorough trial at their hands, and be judged on its merits.

A few typical cases are appended, illustrating the effects of the drug.

CASE I. Katharine N., aged fifty, short and of slender build, unmarried, tailoress, first came under the writer's care at the Boston Dispensary, in October, 1876. She had been a martyr to asthma and chronic bronchitis for twelve years. Frequent paroxysms of dyspnœa had greatly reduced her strength, and her sufferings were unusually severe. During the next two years, trial was made of nearly every known remedy, but without much benefit. Tonics and alteratives seemed of no avail.

The nitrite of amyl gave some relief, but was dreaded by the patient on account of its disagreeable physiological effects. In February, 1879, trial was made of ethyl iodide. The result was remarkable. Not only was the dyspnœa relieved, but there was no recurrence of it for several hours, and a good night's rest was obtained. Similar favorable results have followed each inhalation.

At the present time, May, 1880, the attacks of dyspnoea are few and far between, and much less severe than formerly.

CASE II. James B., aged fifty-six, slender built indoor man, contracted spasmodic asthma in the army in 1865, and has been subject to it ever since. He had attacks of dyspnoea frequently in the early morning. Has tried most of the usual remedies. In February, 1879, began inhaling ethyl iodide, and found that it gave positive relief. When used at the commencement of a paroxysm, it had the effect of rendering the latter abortive. A decided amelioration of symptoms followed its continued use.

CASE III. Thomas A., aged fifty-seven, plasterer, has had nervous asthma for sixteen years. It first supervened on an attack of bronchitis. Paroxysms of dyspnoea were frequent, and lasted some hours. Was obliged to sit up at night. After trial of different remedies, began inhaling ethyl iodide February 14, 1879. Marked relief followed. After several weeks of this treatment, the paroxysms, which had steadily diminished in number, at length ceased altogether.

April 16, 1880. Patient has been free from dyspnoea for a year past, though his respiration is still wheezy.

CASE IV. Mary M., aged forty-five years, married, dark complexioned, rather stout, contracted asthma in the following manner: Sixteen years ago, while engaged in frying salt pork, the patient, through some mishap, was nearly suffocated by smoke. An attack of asthma ensued, and she has since been subject to that affection. Paroxysms, on an average, three times weekly. Had tried the ordinary remedies.

April 14, 1880. Half a drachm of the drug was put into a little vial and the patient inhaled the vapor. After three minutes the breathing was easier, and this condition lasted for three hours.

May 4. Has continued to practise three daily inhalations of ten minutes, and had no attack last week.

May 22. She states that the medicine has given more relief than any previous treatment.

CASE V. Elizabeth P., married, aged forty-four years, of nervous temperament, has been subject to a difficulty in breathing for eight years past, which is much aggravated by frequent attacks of bronchitis.

May 19, 1880. After five minutes inhalation of Ethyl Iodide, there was marked exhilaration of spirits and some hysterical laughter. This phase was shortly succeeded by a feeling of invigoration and greater ease in breathing. This condition, together with a sensation of calmness and well-being, lasted for some hours.

May 24. The same effects have followed systematic daily inhalations.

With a view to the collection of cases and comparison of results, the writer will feel much indebted to any Physician who may make a trial of the drug, and who will send him a brief report of effects observed.

